

REMARKS

Applicants have amended their claims in order to further define various aspects of the present invention. Specifically, Applicants have amended claim 1 to set forth thicknesses respectively of the filling layer and of the photosensitive resin composition layer containing a phosphor, as described on page 16, and in the paragraph bridging pages 20 and 21, of Applicants' specification.

In addition, Applicants are adding new claims 3-12 to the application. Claims 3 and 4, dependent respectively on claims 1 and 3, further define thicknesses respectively of the photosensitive resin composition layer and of the filling layer. Claim 5, dependent on claim 4, further defines the thickness of the photosensitive resin composition layer. Claims 6 and 7, each dependent on claim 1, respectively recites that the phosphor is a phosphor capable of forming a phosphor pattern of the field emission display panel; and recites that the photosensitive resin composition layer has a specified viscosity. Claims 8 and 10-12 further define the viscosity of the photosensitive resin composition layer or of the filling layer. Claim 9 defines the material of the filling layer.

With respect to the newly added claims, note, for example, pages 16-21 of Applicants' specification.

Applicants respectfully submit that all of the claims now presented for consideration by the Examiner patentably distinguish over the teachings of the prior art applied by the Examiner in rejecting claims in the Office Action mailed July 7, 2006, that is, the teachings of U.S. Patent No. 5,294,516 to Sato, et al, and Japanese Patent Document No. 06-273925, under the provisions of 35 U.S.C. §103.

It is respectfully submitted that the teachings of these references applied by the Examiner would have neither disclosed nor would have suggested such a

photosensitive element for a field emission display panel as in the present claims, including, inter alia, wherein such element has a filling layer of a thickness of 10-200 μ m on a support film and a photosensitive resin composition layer containing a phosphor, with a thickness of 5-200 μ m, on the filling layer. See claim 1.

More specifically, it is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested such a photosensitive element as in the present claims, having features as discussed previously in connection with claim 1, and, additionally, wherein the thickness of the photosensitive resin composition layer and/or of the filling layer is that set forth in claims 3-5; and/or wherein the phosphor is a phosphor capable of forming a phosphor pattern of the field emission display panel (see claim 6); and/or wherein the photosensitive resin composition layer and/or filling layer have viscosities as set forth in claims 7, 8 and 10-12; and/or wherein the filling layer is made of a resin having thermoplastic properties which deforms by a stress external to the photosensitive element (see claim 9).

The present invention as claimed herein is directed to a photosensitive element used in fabrication of a field emission display panel.

In the prior art, as one of the flat plate display panels, there has been known a field emission display panel which enables multi-color display by providing a phosphor which emits lights when electrons, emitted from metal or semiconductor surfaces, collide therewith.

Conventionally, as a method for forming the phosphor surface of field emission display panels, a slurry liquid or a paste in which phosphors of respective colors are dispersed is coated by a printing method. However, this technique using a phosphor-dispersed slurry liquid has various problems. For example, there is a

problem of stability of the liquid. Moreover, with increased sizes of screens and the need for making a fine pattern, problems with respect to uniformity of the screen, when using a liquid for production thereof, occurs.

Against this background, Applicants provide a photosensitive element for a field emission display panel which can easily be handled and can form a phosphor pattern having high precision, uniform shape and excellent photosensitivity, with good workability. Applicants have found that by utilizing a photosensitive element having a filling layer on a support film and a photosensitive resin composition layer containing a phosphor on the filling layer, with each of the filling layer and photosensitive resin composition layer having thicknesses as in the present claims, objectives according to the present invention are achieved. Specifically, as described on page 16, lines 15-24, of Applicants' specification, by utilizing a photosensitive resin composition layer of a thickness according to the present claims, a phosphor pattern after calcination is sufficiently thick and as good emission efficiency, while deterioration of the shape of the phosphor pattern is avoided.

Moreover, by utilizing a photosensitive element having photosensitive resin composition and filling layers with viscosities as in the present claims, exuding of the photosensitive resin composition layer and/or filling layer from an edge portion can be avoided, while improved adhesion is achieved. Moreover, the multiple colors of the phosphor layers can be more uniformly formed.

The applied Japanese patent document discloses a photoresist film useful at the time of manufacture of, e.g., plasma displays. As described in paragraph [0005] of this patent document, the film includes a base polymer. As described in paragraph [0013], a photosensitive resin composition can be laminated on the base polymer. This patent document discloses that the photoresist film is useful for a

fluorescent display material of a plasma display panel. Note paragraph [0002] of this patent document.

It is respectfully submitted that this reference does not disclose, nor would have suggested, a photosensitive element for a field emission display panel as in the present claims, including, inter alia, the filling layer, much less such filling layer having the recited thickness, on a photosensitive resin composition layer containing a phosphor, having the recited thickness. It is respectfully submitted that the applied Japanese patent document does not disclose, nor would have suggested, the thickness of the photosensitive resin composition layer as in the present claims, and advantages thereof, particularly together with thickness of the filling layer, when the element is used for a field emission display panel of the present claims, as described in Applicants' specification and as discussed previously.

It is to be noted that paragraph [0014] of the applied Japanese patent document discloses that the photopolymer layer has a thickness of 10-200 μ m. It is respectfully submitted that this does not disclose, nor would have suggested, advantages of the combination of the thicknesses of the filling layer and photosensitive resin composition layer as in the present claims, particularly where the element is used for forming a field emission display panel as in the present claims.

It is respectfully submitted that the additional teachings of Sato, et al, would not have rectified the deficiencies of the applied Japanese patent document, such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art. Sato, et al, discloses a light-sensitive transfer material adapted to be dry-transferred to an uneven surface, suitable for the preparation of color filters for use in liquid crystal displays and the like or the preparation of printed-

wiring boards. See column 1, lines 6-14. The transfer material includes a peel-off support having an alkyl-soluble thermoplastic resin layer, an interlayer, and a light-sensitive resin layer provided in this order thereon, preferably with the adhesion between the thermoplastic resin layer and the peel-off support being smallest. See column 2, lines 41-47. Note also column 2, lines 58 and 59. See also column 3, lines 12-19 and 24-26, further describing the peel-off support. This patent discloses that the thickness of the thermoplastic resin layer is preferably in the range of 6 μ m or more, the upper limit of the thickness being about 100 μ m or less, preferably about 50 μ m or less to maintain good developability and producibility. See column 4, lines 39-49. Note also column 6, lines 28 and 29, describing that the light-sensitive resin layer may further contain dyes and pigments incorporated therein, the pigment grains preferably having a grain diameter of about 5 μ m or less. Note column 6, lines 28-34.

Initially, it is noted that the applied Japanese patent document is directed to a photoresist film including a photosensitive resin composition, for use in forming plasma display panels. In contrast, Sato, et al, is directed to light-sensitive transfer materials for forming, e.g., color filters. The applied Japanese patent document addresses problems in connection with utilizing liquefied photoresist, as described in paragraph [0003] thereof. In contrast, Sato, et al, addresses problems for providing transfer of light-sensitive resin layers from a temporary peel-off support to a permanent support without causing poor transfer.

In light of differences in the technology involved in the Japanese patent document, on the one hand, and in Sato, et al, on the other, and further in light of different problems addressed by each, it is respectfully submitted that one of ordinary skill in the art concerned with in the Japanese patent document would not

have looked to the teachings of Sato, et al. In other words, it is respectfully submitted that these two references are directed to non-analogous arts.

In any event, it is respectfully submitted that there would have been no proper motivation for combining the teachings of the applied Japanese patent document with the teachings of Sato, et al, as applied by the Examiner, absent hindsight use of Applicants' invention, which hindsight use is improper under the requirements of 35 U.S.C. §103. Without such motivation, the combination of teachings as applied by the Examiner is improper.

Furthermore, even if the teachings of the applied references were properly combinable, it is respectfully submitted that the combined teachings of the applied references would have neither disclosed nor would have suggested the specific thickness ranges for the thickness of the respective photosensitive resin composition layer and filling layer as in the present claims, and advantages due thereto, as discussed in the foregoing and in Applicants' specification.

The contention by the Examiner that the applied Japanese patent document discloses a photoresist film for forming phosphor patterns on a fluorescent display is noted. However, it must be emphasized that the applied patent document discloses, as an illustrative use of such display, a plasma display panel. It is respectfully submitted that this reference, either alone or in combination with the teachings of Sato, et al, would have neither taught nor would have suggested a photosensitive element for a field emission display panel as in all of the present claims, and, in particular, wherein the phosphor is a phosphor capable of forming a phosphor pattern of the field emission display panel, as in present claim 6.

It is emphasized that the present invention addresses and solves the problem of the difficulty in providing a uniform shape or pattern in a field emission display

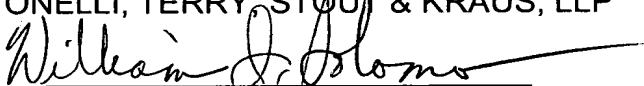
panel, particularly with large-sized displays, and the problem of providing positional precision in the displays. Clearly, neither of the applied references disclose, or would have suggested, an element for a field emission display panel; and it is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested the presently claimed invention as a whole, including the problem addressed and solution thereto.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently in the application are respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 C.F.R. §1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (Case No. 511.36276VV3), and please credit any excess fees to such deposit account.

Respectfully submitted,

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